

STATE OF ALASKA

William A. Egan, Governor



Annual Progress Report for

LIFE HISTORY INVESTIGATIONS OF NORTHERN PIKE
IN THE TANANA RIVER DRAINAGE

by

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RESEARCH PROJECT SEGMENT

State: Alaska

Project No.: F-9-3

Name: Sport Fish Investigations of Alaska.

Study No.: R-III

Study Title: Life History Investigations of Northern Pike in the Tanana River Drainage.

Period Covered: July 1, 1970 to June 30, 1971.

ABSTRACT

During 1970, 378 northern pike, Esox lucius Linnaeus, were tagged in the Minto Flats. Thirty-six were recaptured.

Test netting showed pike are more abundant in the northwestern and southeastern sections of Minto Flats.

Creeel census data showed a decrease in fishing effort and catch in 1970 compared to 1969. Subsistence fishermen took approximately 800 pike.

Some pike spawning grounds were located and their characteristics assessed. Spawning occurred from approximately May 10 to June 15.

Age and growth studies utilizing scales and vertebrae from pike were begun. Aging by vertebrae appears to be more accurate than the scale method.

Water temperatures and chemistry were monitored during the summer in Minto Flats.

Food habit studies showed that fish were the most important food item, followed by invertebrates.

RECOMMENDATIONS

1. A statistically based creel census should be continued and arranged so the entire Minto Flats can be censused. The subsistence fishery should be intensely monitored.
2. The tagging program should be continued to further define winter and summer movements.
3. Major spawning areas should be located, delimited, and assessed. Fecundity studies should be initiated.
4. Attempts should be made to estimate pike populations in various areas of Minto Flats.
5. Food habits studies should be continued.
6. Surveys of other pike waters throughout the Tanana River drainage should be initiated.

TECHNIQUES USED

Northern pike were captured using graduated mesh gill nets, four- and five-inch stretched mesh gill nets, fyke nets, beach seines, and sport angling gear. All fish taken alive were weighed, measured, and tagged. Pike movements were determined by tagging and recovery. Floy yellow plastic dart tags were used and recaptures were made by Department personnel and subsistence and sport fishermen.

Creel census information was collected by interviewing anglers. Aerial boat counts were made and correlated with ground counts. Subsistence fishery estimates were made by interviewing fishermen and counting nets and fish.

Spawning grounds were located by foot and boat.

Scales, sections of dorsal fin rays, and the first four to eight vertebrae were taken for age determination. Pike were aged using scales and vertebrae. Scales were mounted between glass slides and read with a microprojector. Vertebrae were cleaned, dried, separated, placed in a clearing agent, and read with a binocular microscope.

Water temperatures were taken with hand and electric thermometers. Water chemistry was determined with a Hach Model AC-36-WR test kit. Some water samples were also analyzed by the Federal Water Pollution Control Administration, Alaska Water Laboratory.

Job R-III-C Pike Spawning Habits.

Objectives

To locate spawning grounds, determine spawning dates, fecundity, and make spawning observations of Minto Flats pike.

Eighteen adult pike (12 males, 6 females) captured on May 6, 7, and 8, near New Minto were examined for spawning readiness. Milt ran from the males when their abdomens were pressed. The females were nearly ready to spawn as the ovarian tissue was ruptured. Gonad examination showed that none of the fish had spawned.

Test netting was resumed on May 14, two days after ice breakup, at Rock Island Slough and the confluence of the Tolovana and Chatanika rivers. Twenty-one pike were caught (8 females, 13 males). Five were spent or partially spent. The remainder had not spawned but ran eggs and milt when handled. Gravid females were found as late as June 16. After that date, all females examined were spent.

Pike may commence spawning while ice is still in the main rivers. At this time ice is usually out of the shallow bays and sloughs. Water temperatures on May 6 were 42°F (5.6°C) in the ice-free shallows, and 33°F (0.6°C) in the main rivers. By May 18, the water temperature had risen to 55°F (12.8°C) in the shallows.

Kotlyarevskaya (1969) states that pike eggs hatch in 10 - 12 days at 10°C (50°F). They can develop in nature at temperatures ranging from 2° - 23°C (35.6 - 73.4°F). Fluctuating temperatures are part of the ecological norm for development of pike eggs.

Temperatures on the Minto Lakes spawning grounds varied from 5.6° - 11.7°C (42° - 53°F).

Known pike spawning grounds in Minto Flats have the following characteristics: shallow, with emergent aquatic vegetation and depths from three inches to two feet, little or no current, ice-free before the main rivers, and mud bottom covered with vegetation mat. These areas are subject to rapidly fluctuating water temperatures.

Spawning may also occur in the shallows and along weedy protected banks of the main streams. In late June and early July, pike fry from 35 - 73 mm were collected from the edges of the Tatalina River approximately 50 - 100 feet upstream from its confluence with the Chatanika River. The closest known spawning ground, Bear Paw Slough, is over 1/2-mile up the Chatanika River.

Spawning in Minto Flats began approximately May 10, 1970, peaked in the last week of May, and was completed by approximately June 16.

The following areas in Minto Flats are known pike spawning grounds: the shallow bays and sloughs surrounding and connecting with Minto Lake; the lower reaches of Rock Island Slough; the Windy Lake-Uncle Sam Creek-Montana Creek complex; and Bear Paw Slough.